

Translation

PATENT COOPERATION TREATY

PCT/DE2003/004052



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 46424WO/NZ | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/DE2003/004052 | International filing date (day/month/year) 09 December 2003 (09.12.2003) | Priority date (day/month/year) 09 January 2003 (09.01.2003) |
| International Patent Classification (IPC) or national classification and IPC G11C 13/02 | | |
| Applicant POLYIC GMBH & CO. KG | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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|---|---|
| Date of submission of the demand 04 August 2004 (04.08.2004) | Date of completion of this report 04 May 2005 (04.05.2005) |
| Name and mailing address of the IPEA/EP | Authorized officer |
| Facsimile No. | Telephone No. |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2003/004052

I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

- ☐ the international application as originally filed.
- ☒ the description, pages 1-6, as originally filed,
 pages _____, filed with the demand,
 pages _____, filed with the letter of _____,
 pages _____, filed with the letter of _____.
- ☒ the claims, Nos. _____, as originally filed,
 Nos. _____, as amended under Article 19,
 Nos. _____, filed with the demand,
 Nos. 1-8, filed with the letter of 13 April 2005 (13.04.2005),
 Nos. _____, filed with the letter of _____.
- ☒ the drawings, sheets/fig 1/1, as originally filed,
 sheets/fig _____, filed with the demand,
 sheets/fig _____, filed with the letter of _____,
 sheets/fig _____, filed with the letter of _____.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-----|-----|
| Novelty (N) | Claims | 1-8 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | | YES |
| | Claims | 1-8 | NO |
| Industrial applicability (IA) | Claims | 1-8 | YES |
| | Claims | | NO |

2. Citations and explanations

Reference is made to the following documents:

D1: TAKAHIMA WATARU ET AL: "Electroplasticity memory devices using conducting polymers and solid polymer electrolytes" POLYM INT; POLYMER INTERNATIONAL 1992, Vol. 27, No. 3, 1992, pages 249-253, XP002271825, and

D2: EP-A-0 268 370 (CANON KK) 25 May 1988 (1988-05-25)

1. The application does not meet the requirements of PCT Article 6 because claim 1 is not clear:

1.1 The expression "storage element made **substantially** of organic material" used in claim 1 is vague and leaves the reader uncertain as to which parts of the storage element are made of organic material.

1.2 The expression "of the **component**" used in the claim is unclear since claim 1 does not define a **component**.

1.3 The expression "an organoresistive material **embedded** in an electrolyte" is likewise vague and unclear, since the reader is left uncertain what is meant by such an embedding.

1.4 In addition, the subject matter for which protection is sought in claim 1 is not clear, since the achievement of the storage function is not described, apart from the statement that an organoresistive material is embedded in an electrolyte.

2. Claim 1:

The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step (PCT Article 33(3)).

D1 is considered the prior art closest to the subject matter of claim 1. D1 discloses (see page 249, left-hand column, paragraph 1 - page 250, right-hand column, paragraph 3, and figures 1, 2(b), 2(b); the references in parentheses relate to said document) a storage element (memory device) made substantially of organic material (see, for example, organic "conducting polymer"), the storage function of the component being achieved in that an organoresistive material (conducting polymer CP: poly(3-methylthiophene)) is arranged underneath an electrolyte layer (solid polymer electrolyte SPE).

The subject matter of claim 1 differs therefore from D1 only in that, in the present application, the organoresistive material is embedded in the electrolyte, i.e. the organoresistive material is surrounded by the electrolyte on more than one of its sides/surfaces.

This feature, i.e. multi-sided surrounding of the organoresistive material by the electrolyte is, however, merely one of several arrangements of the electrolyte with respect to the organoresistive material which is achieved depending on the deposition method for the electrolyte selected by a person skilled in the art.

In addition, it is unclear what the advantage is of such a multiple-sided surrounding of the organoresistive material by the electrolyte.

The subject matter of claim 1 cannot therefore be deemed inventive.

3. Independent claim 7:

The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 7 does not involve an inventive step (PCT Article 33(3)).

D2 discloses (see page 14, line 16 - page 15, line 18 and figure 1; the references in parentheses relate to said document) the use of a storage element (see figure 1) wherein the circuit is designed between a ground and a supply voltage and comprises at least one resistor (15), a switching device with storage function (memory switching device: 11, 12, 13) and a control electrode (18).

The subject matter of claim 7 differs therefore from D2 in that the storage element from D2 is replaced by a storage component of a different type, namely an organoresistive conductor element embedded in an electrolyte. However, it is generally known to a person skilled in the art that, in the switching concept described in D2, the type of storage element can be exchanged if required. In this way, he would arrive at a use as per claim 7 of the storage element according to one of claims 1 to 6, without thereby being inventive. The subject matter of claim 7 therefore does not involve an inventive step (PCT Article 33(3)).

4. Dependent claim 2:

Concerning claim 2, see the writing electrode in figure 1, which consists of a conductive material (Li) and wherein by applying a voltage to the conductive material, the ion

flow through the electrolyte (solid polymer electrolyte) brings about a readable alteration of the conductivity in the organoresistive material (conducting polymer). The subject matter of claim 2 does not therefore involve an inventive step.

5. Dependent claims 3-6 and 8:

The further dependent claims 3-6 and 8 do not contain any features which, in combination with the features of any claim to which they refer, meet the PCT novelty and inventive step requirements.